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Title: RCT Continuing Training 4th Quarter 2021 Exercise Guide

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Los Alamos NATIONAL LABORATORY

RCT 4th Quarter 2021 Training Exercise Guide
UTrain #53324

Name:	**Z#:**
Signature: Type your full name in this block to indicate your signature on the date of this form.	**Date:**

Instructions: After viewing the pre-recorded lecture, complete the following exercise. Scan or email your responses to RP-training@lanl.gov for review. An email confirmation will be sent from the RP training staff stating your training records have been updated. This form is fillable and answers may be typed or hand-written. An optional feedback form has been attached for your convenience.

Question 1: Fill in the table below.

Radiation Type	Range in Air	Shielding Materials
Alpha		
Beta		
Gamma		
Neutron		

Question 2: List 5 events which require an external radiation survey, per RP-PROG-TP-200.

Question 3**:** When must a Shallow Dose Evaluation (SDE) be performed?

Question 4: What are the two different Sum of All Radiation (SAR) equations?

OW/CW < 1.2:

OW/CW $\geq$ 1.2:

Question 5: A survey is performed with the following results:

OW @ 30cm = 15 mR/hr
CW @ 30cm = 12 mR/hr
Neutron Dose Rate @ 30 cm = 7 mrem/hr

What is the Sum of All Radiation?

Question 6: What are the general requirements of an RCT for contamination control?

Question 7: Match the terms with their associated descriptions

a) Removable Contamination	Placed in a vial with DI water
b) Fixed Contamination	LAS
c) Qualitative Survey Method	Direct frisk
d) Quantitative Survey Method	Easily transferred to personnel or equipment
e) Total Contamination Method	Disk smear
f) Tritium smear	Not easily transferred to personnel or equipment

Question 8: A direct frisk of a floor is performed using a Ludlum 139 with a 43-32 detector, with a probe area of 76cm^2 and a CCF of 2. The net counts read 60 cpm. What is this in dpm/100cm^2 ?

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4th Quarter 2021 Training Exercise Guide
Post job Survey Data

Instructions:

Using the information on the provided survey map and tables below, fill out the RP-PROG-FORM-114. The data shown are the direct results from the field, and should be compared to their respective MDA/DL and MDDRs prior to documenting the survey.

Contamination Surveys

Field screen ≤ MDA/DL	Field screen > MDA/DL
Net counts = NDA	Net counts = Gross counts - Background

Radiation Surveys

Dose Rate < MDDR
Record as NDA

Instrument Type	Instrument Number	CAL Due	%Eff	CF	BKG (α)	BKG (β, βγ)	MDA/DL (α)	MDA/DL (β, βγ)	MDDR (beta/gamma)	MDDR (neutron)
RO-20	5432	12-31-21	N/A	N/A	N/A	N/A	N/A	N/A	0.1	N/A
RadEye PX w REM Ball	15252	07-21-22	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.5
RadEye SX w/43-93	39091	08-20-22	24	1	8	1205	44	1500	N/A	N/A

Survey Point	Description	Alpha Field Screen (dpm/100cm²)	Beta Field Screen (dpm/100cm²)	On-contact (OW) mR/hr	30cm OW (mR/hr)	30cm CW (mR/hr)	30cm NDR (mrem/hr)	G/A OW (mR/hr)	G/A CW (mR/hr)	G/A NDR (mrem/hr)
1	CA Entrance	14	1410	-	-	-	-	-	0.8	NDA
2	Glovebox #1	32	3327	-	-	-	-	10	7	NDA
3	SE CA corner	28	2145	-	-	-	-	-	4	NDA
4	Piping station drum	77	15,980	340	44	36	10	-	-	-
5	Valve CS 107B	115	7,656	55	12	9	12	-	-	-
6	South piping station	84	5,005	120	22	20	6	-	-	-
7	Valve CS 204A	55	12,654	35	8	8	3	-	-	-
8	NE piping station	220	6,212	82	17	15	1	-	-	-
9	Item release table	10	2,008	-	-	-	-	-	2.5	0.5
10	RBA (LAS)	11 (dpm/LAS)	1360 (dpm/LAS)	-	-	-	-	-	0.5	NDA

Survey Map Template

SURVEY INFORMATION

Sample Date/Time: 09/22/21 16:30	# of Samples: 10	Location: TA00 Building 1197 Room 112
RWP#: 21-015		RPIN#: N/A
RCT: Billy McTech		Z: 123456
Comments: Survey # 210922-07 Post job survey in room 112 from CS piping maintenance (For Training Only)		

SURVEY MAP

RCA - Radiological Controlled Area
RBA - Radiological Buffer Area
RA - Radiation Area
CA - Contamination Area
HRA - High Radiation Area
HCA - High Contamination Area
ARA- Airborne Radioactivity Area
HJEA - Hot Job Exclusion Area
T&L - Trash and Laundry
SOP - Step Off Pad

Area boundary

① Survey location (Smear or dose rate)

② LAS survey path

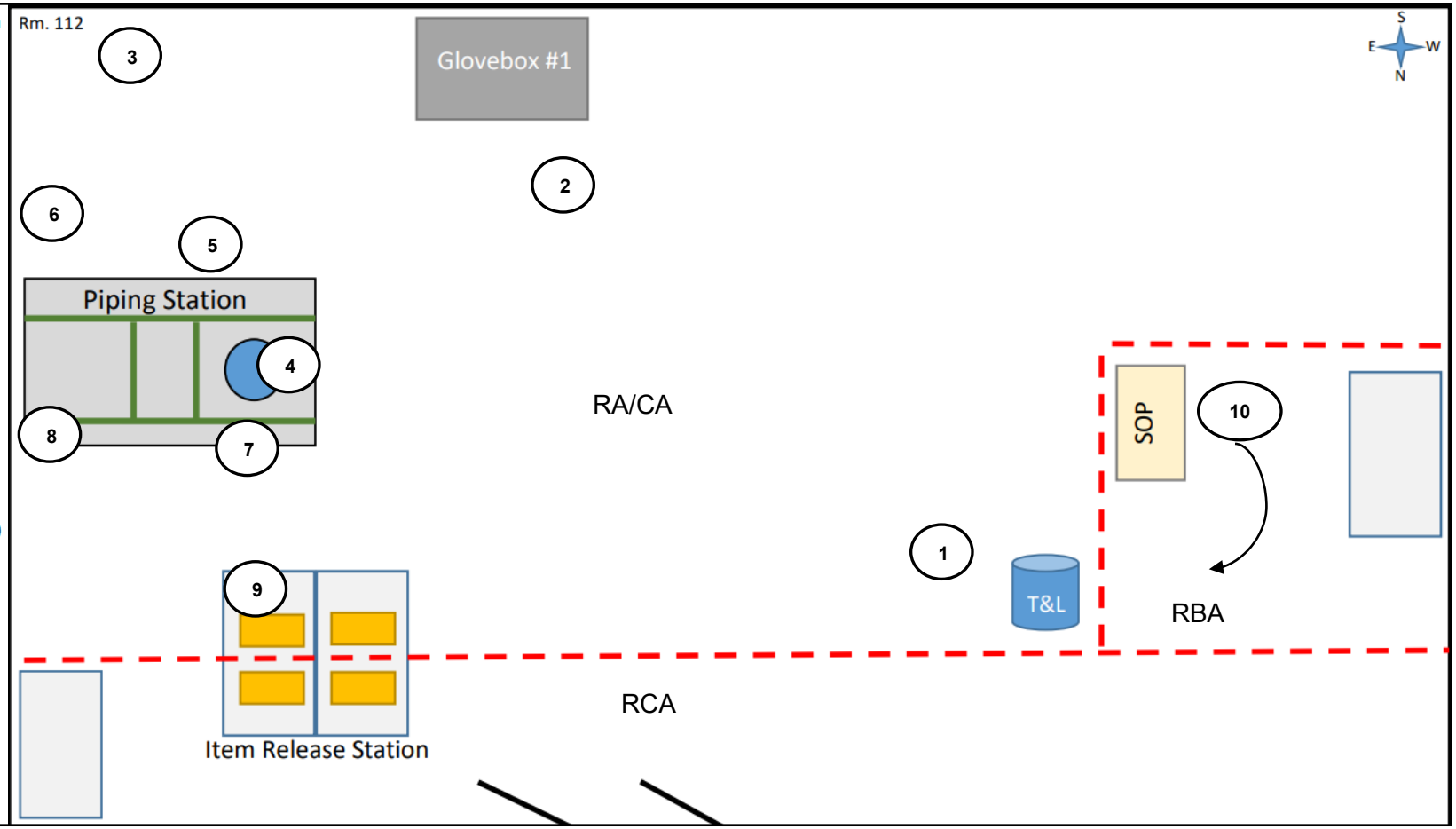
△ Air sample location

x.x - 1m/General Area (β, γ, n)

x.x* - On contact (β, γ, n)

x.x+ - 30 cm (β, γ, n)

**All dose rates are recorded in mRem/hr.



Instructions

1. **Sample Description-** Include date and approximate time last sample was taken per survey. Enter location information, RCT name and Z#, and RCT signature.
2. **Instrumentation-** Fill in instrument information, marking unused boxes with one of the following –, \, or N/A. When documenting a base unit and detector, both shall be recorded on the same line, not separated.
3. **Purpose of Survey-** Mark appropriate box describing survey type. If documenting an RMI, mark routine and indicate frequency and title/description of RMI in the comments section. If using "Other" clearly identify purpose of survey.
4. **Smear Counter-** Enter instrument information. If additional results are attached to the survey form, check the appropriate box.
5. **HPAL Barcode-** Place an HPAL barcode sticker in the space provided or write in the barcode number. If samples were not submitted to HPAL, check the N/A box.
6. **RWP# / RPIN #-** Record RWP and RPIN number as applicable.
7. **Correction Factor-** If a correction factor is utilized, the corresponding letter shall be annotated inside the brackets in the appropriate survey results box.
   a) 1.5: correction factor for DU at 30cm
   b) 2.5: beta correction factor
   c) 3.0: correction factor for DU on contact
   d) Other: any other correction factor determined by HP
8. **Corrected Beta Dose Rate-** If OW/CW ≥ 1.2, then record the value, (OW – CW) x 2.5, under the Corrected β (mrem/hr) column.
9. **Neutron Dose Rate-** If a surface reading and a 30 cm neutron dose rate are required for a survey, then record both values in the same 30 cm neutron dose rate cell, separated by a "/" and place an * on the surface reading as instructed in the survey form note.

An N/A or strike through shall be used for any unused sections, lines, or boxes. A single N/A or strike through can be used for multiple unused sections, lines, or boxes.

RADIOLOGICAL SURVEY - EXTERNAL RADIATION/CONTAMINATION FORM

SAMPLE DESCRIPTION

Sample Date:		**Time:**	**Number of Samples:**		
TA:	**Bldg:**	**Room:**			
RCT:	**Z:**	**Signature:**	**RCT:**	**Z:**	**Signature:**
RCT:	**Z:**	**Signature:**	**RCT:**	**Z:**	**Signature:**
Reviewed By:		**Z:**		**Date:**	

INSTRUMENTATION

Instrument Type	Instrument Number	CAL Due	%Eff	CF	BKG (α)	BKG (β, βγ)	MDA/DL (α)	MDA/DL (β, βγ)	MDDR (beta/gamma)	MDDR (neutron)

SMEAR COUNTER ☐ N/A

Note: Placing an * after a 30 cm neutron dose rate indicates a surface reading. Placing an * in the smear results box signifies dpm/smear instead of dpm/100cm^2.

Instrument Type	Instrument Number	CAL Due	Additional Results Attached: (☐ Additional Results N/A)	☐ Berthold /Tennelec/ Protean Printout	☐ HPAL/LSC Printout	☐ RP-PROG Form# _____

PURPOSE OF SURVEY

☐ Routine ☐ Pre-Job ☐ Post-Job ☐ Hot Job ☐ Offsite Shipment ☐ Onsite Shipment ☐ Posting ☐ Characterization ☐ Other:

HPAL BARCODE

☐ HPAL Barcode N/A

RWP #

RPIN #

CORRECTION FACTORS

a) 1.5 (DU at 30cm)
b) 2.5 (β)
c) 3.0 (DU on contact)
d) Other: _____

COMMENTS

Survey Point #	Item / Area Surveyed	Contamination Survey						External Radiation Survey											
		Direct Survey Results		Smears (Contamination, Tritium)		LAS		On Contact		At 30 cm					General Area / At 1 Meter				
		α	β, βγ	α	β, βγ	α	β, βγ												
		dpm/ 100cm^2	dpm/ 100cm^2	dpm/ 100cm^2	dpm/ 100cm^2	dpm/ LAS	dpm/ LAS	Open Window mR/hr	Open Window mrem/hr	Open Window mR/hr	Closed Window mR/hr	Corrected β mrem/hr	Neutron Dose Rate mrem/hr	Sum of All Radiation mrem/hr	Open Window mR/hr	Closed Window mR/hr	Corrected β mrem/hr	Neutron Dose Rate mrem/hr	Sum of All Radiation mrem/hr
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Level 1 Evaluation Form

Instructor Name: _____ Course Date: _____

Course Title: _____ Course No.: _____

Instructor: *Were the instructor's methods effective? Was the instructor prepared?*
Course Materials: *Were course materials/handouts helpful during class? Please explain.*
Classroom Engagement: *Were classroom activities/discussions engaging? Please explain.*
Course Effectiveness: *What instructional methods/training aids could have benefited the students better? Please explain.*
Application: *Was this training meaningful and applicable to your current job? (i.e., will you be able to apply this training in your current position?) Please explain.*
Areas for Improvement: *Please list any ideas or suggestions to help improve the training program.*

Knowledge Level: *Before this class, my knowledge on this subject was (check one):*

☐ Non-Existent ☐ Novice ☐ Intermediate ☐ Advanced ☐ Expert

Knowledge Level: *After this class, my knowledge on this subject is (check one):*

☐ Non-Existent ☐ Novice ☐ Intermediate ☐ Advanced ☐ Expert

Name: (optional) _____ Z# _____ Date: _____

NNSA National Nuclear Security Administration